Project Introduction

The present proposal describes the development of an adaptive Computed Tomography Imaging Spectrometer (CTIS), or "Snapshot" spectrometer which can "instantaneously" capture a full 3D data cube. The technology is applicable to hyperspectral imaging for remote sensing of extra-terrestrial planetary bodies and deep space objects. The snapshot capability of the technology makes it possible to capture transient events otherwise inaccessible with conventional pushbroom or whiskbroom imagers. The adaptive component of the innovation is a liquid crystal spatial light modulator which replaces the standard computer generated hologram in this technology. As such it can be rapidly tuned at KHz rates for optimal performance in real time improving the signal to noise ratio and data cube image reconstruction.

Primary U.S. Work Locations and Key Partners

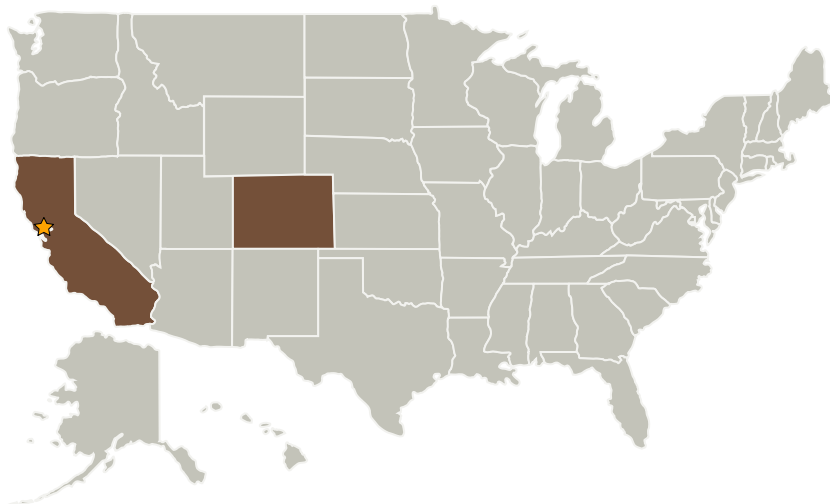| Organizations Performing Work	Role	Type	Location
⭐Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Boulder Nonlinear Systems, Inc.	Supporting Organization	Industry	Lafayette, Colorado

Adaptive Computed Tomography Imaging Spectrometer, Phase I

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Primary U.S. Work Locations	
California	Colorado

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  └ TX08.1 Remote Sensing Instruments/Sensors
    └ TX08.1.3 Optical Components